

INDIANA Epidemiology NEWSLETTER



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The Threat of Pandemic Influenza

What is Influenza?

Influenza is caused by a virus that attacks the upper respiratory tract—the nose, throat, and bronchi, and, rarely, the lungs. The infection is characterized by a sudden onset of fever, myalgia, headache, nonproductive cough, sore throat, and rhinitis about one to four days after exposure. Influenza is transmitted by droplets and droplet nuclei released after infected persons cough or sneeze. Adults are typically infectious from one day prior to five days after illness onset. Children can be infectious for over 10 days, and can shed virus up to six days prior to illness onset. Most people recover within one to two weeks without requiring medical treatment. Hospitalization and deaths mainly occur in high-risk groups, such as the elderly and immunosuppressed.

The hallmark feature of influenza viruses is their ability to mutate. All influenza viruses have a segmented genome, which can rearrange to produce new viral proteins. These new proteins result in new strains of virus. Influenza viruses are categorized as type A, B, or C. Types B and C are found in humans. Type B causes mild to moderately severe illness, whereas type C causes mostly asymptomatic infection. However, type A can infect humans **and** animals, such as birds (including poultry and ducks) and pigs. Influenza A viruses can be further divided into subtypes according to differences between two viral surface proteins, hemagglutinin (H) and neuraminidase (N). There are 16 H antigens (H1-H16) and 9 N antigens (N1-N9).

What is Pandemic Influenza?

There are two ways an influenza virus can mutate. A regular, small, and permanent change in the genetic material of the virus is known as **antigenic drift**. This creates seasonal epidemics and is why a flu vaccine developed for the last flu season will not protect against the new strain of the current season. Because the body lacks specific antibodies for the new strain, there is incomplete natural protection.

A virus may also mutate through a process known as **antigenic shift**. This occurs when two or more influenza A subtypes from different species—such as bird and pig or bird and human—trade and merge genes, creating a new combination of H and N proteins. This results in a new, or novel, virus to which humans have not been exposed. The general population would have little or no immunity, and a pandemic (worldwide epidemic) causing

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widespread illness and death is possible. Three pandemics occurred in the twentieth century (see table below). The last two pandemic viruses were combinations of bird and human influenza viruses.

To cause a pandemic, a viral strain must have three characteristics:

- Be **novel** to the human population;
- Have **increased virulence**, resulting in high morbidity and mortality; and
- Be **easily transmitted** human to human.

Why Are Public Health Officials Concerned Now?

Recently, there has been an outbreak of avian (bird) influenza A H5N1 in chickens in Vietnam, Thailand, and Cambodia. This highly pathogenic strain is generally transmitted from bird to bird. Migratory birds, such as wild ducks, are often asymptomatic carriers of viruses which then transmit the virus to domestic fowl such as chickens, turkeys, and geese. These domestic species, which, in Asia, generally live in close proximity to humans and domestic animals, are highly susceptible.

Influenza A H5N1 does not generally affect humans; however, this outbreak has caused several human infections, with an approximate 50 percent mortality rate for the reported cases. This strain is often accompanied by primary viral pneumonia and acute respiratory distress, the most common cause of flu-related death. Most cases occurred from direct contact with infected poultry or wild ducks. Although very few cases are believed to have occurred from close human-to-human contact with infected cases, further viral mutation may result in easy human-to-human transmission. Health officials fear that this strain or another strain may possibly cause the next influenza pandemic.

Laboratory Diagnosis

Influenza is difficult to distinguish from other respiratory illnesses by clinical diagnosis alone. Laboratory testing is necessary to confirm a diagnosis and identify circulating strains. This will be especially critical in tracking the emergence and transmission of a pandemic strain.

Prevention and Treatment

Vaccination is the principal measure for preventing influenza and reducing the impact of epidemics. Vaccines are based on previously circulating strains. However, since a pandemic strain would be a newly recognized strain, a vaccine would not be available for several months. Oseltamivir (TamiFlu™) is the only drug approved by the U.S. Food and Drug Administration that is effective for the treatment and prevention of the H5N1 strain circulating in Southeast Asia. Supplies will likely be extremely limited during the initial phases of a pandemic.

In the absence of a vaccine and effective antivirals, proper infection control measures, such as hand washing, covering mouths when coughing and sneezing, discarding used tissues, and staying home from work and school if ill, will be critical in preventing the transmission of pandemic influenza.

What's Next?

No one can predict when the next pandemic will occur, or if the circulating H5N1 strain will cause a pandemic. However, federal, state, and local health officials are developing plans and training initiatives to prepare for the next influenza pandemic. The Indiana State Department of Health (ISDH) has developed the Indiana Pandemic Influenza Preparedness Plan, currently under review. This plan will be submitted to the Centers for Disease Control and Prevention by August 25, 2005, and distributed to internal and external partners. The ISDH is also providing pandemic influenza training within the public health preparedness districts this summer and distributing information to health care providers.

Influenza Pandemics of the 20th Century: Impact in the United States*			
Date	Strain	Estimated No. of Deaths in US	Comments
1918-1919 (Spanish Flu)	H1N1	500,000	Global mortality may have been as high as 100 million. The virus likely originated in the U.S. and then spread to Europe.
1957-58 (Asian Flu)	H2N2	60,000	The virus was first identified in China. Approximately 1 million people died globally during this pandemic.
1968-69 (Hong Kong Flu)	H3N2	40,000	The death rate from this pandemic may have been lower, because the strain had a shift in the hemagglutinin (H) antigen only and not in the neuraminidase (N) antigen.
*All three pandemics were characterized by a shift in age distribution of deaths to younger population under age 65 (at least initially); shift was particularly dramatic during 1918 pandemic (see References : NIH: Focus on the flu; HHS: Influenza pandemics; Simonsen 2004; Webster 1997).			

Clinical Description, Prevention, and Treatment of Pandemic Influenza

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Centers for Disease Control and Prevention

The term “flu” is much used and abused. Some people use the term “stomach flu” as an informal way of saying “gastroenteritis of unknown etiology.” Others think that “flu” is any kind of illness with aches and fever with or without respiratory symptoms. **In reality, influenza is none of these things.** Influenza is a specific, often severe, respiratory viral infection caused by *influenza viruses*. The disease is characterized by abrupt onset of constitutional and respiratory symptoms, including fever, chills, muscle aches, headache, malaise, nonproductive cough, sore throat, and runny nose. Upper respiratory and constitutional symptoms tend to predominate in the first several days of illness, but lower respiratory symptoms, particularly cough, are common after the first week. In children, nausea and vomiting and, occasionally, ear infection are also symptoms. Complications of influenza can include pneumonia caused by the influenza virus itself and secondary bacterial pneumonia. Rarely, complications including encephalitis, Reye’s syndrome, and heart infections may also occur.

Since several other respiratory pathogens (including adenovirus, respiratory syncytial virus, parainfluenza virus, rhinovirus, coronavirus, human metapneumovirus, *Mycoplasma pneumoniae* and *Legionella*) can also cause a similar clinical picture, definitive diagnosis of influenza requires laboratory confirmation. However, laboratory testing is not necessary for all patients. In the presence of a community outbreak of respiratory illness, a presumptive diagnosis can be made based on knowledge of the predominant agent causing the outbreak. It is still necessary, however, to test enough patients to characterize the outbreak and to find out if a second agent is also in wide circulation. Laboratory confirmation is most useful when this knowledge will be used to guide treatment decisions, such as prescribing antiviral therapy for influenza (see below) or antibiotics for *Legionella* or *Mycoplasma*.

Prevention

The primary method of prevention of influenza is immunization. Because influenza A viruses frequently change, a new influenza vaccine is needed each year. Because adequate production of influenza vaccine takes six months or longer, every spring, a panel of experts meets to decide which influenza strains will be included in the vaccine for the following season based on knowledge of currently circulating strains. In most years, this results in a good match between the vaccine strains and the influenza strains actually in circulation the following season. However, there have been years in which the circulating strain and the vaccine strains were a poor match, rendering the vaccine only partially effective. Because of the six-month lag time to produce vaccine once a strain is identified, it is unlikely that any substantial amount of vaccine would be available during the first wave of an influenza pandemic.

Antiviral chemoprophylaxis is also effective in preventing influenza or reducing the severity of illness. There are two classes of antiviral agents: the M2 inhibitors, amantadine (Symmetrel®) and rimantadine (Flumadine®); and the neuraminidase inhibitors, oseltamivir (Tamiflu®) and zanamivir (Relenza®). The M2 inhibitors are effective against most strains of influenza A but are not effective against influenza B. In addition, some strains of influenza A, including the current H5N1 strain posing a potential pandemic risk, are resistant to the M2 inhibitors. The neuraminidase inhibitors are effective against both influenza A and influenza B. Resistance to the neuraminidase inhibitors has been rare, but recent reports from Asia indicate that some strains of H5N1 may be partially resistant to these agents as well.

Other preventive measures include covering your mouth when coughing or sneezing, frequent hand washing (influenza virus can be transmitted on hands and inanimate objects), discarding used tissues, and avoiding crowds and mass gatherings. Those with symptoms of influenza should avoid exposing others and should stay home rather than risk exposing others at work or school. In the event of an influenza pandemic, public health measures could include closing of schools and suspension of mass gatherings such as sporting events. Early in the pandemic, consideration might be given to quarantining contacts of the initial cases. These measures would be undertaken with the hope that the pandemic spread could be slowed long enough for vaccine to become available.

Treatment

The same antiviral medications that are used for chemoprophylaxis are also available for treatment of influenza infection. Treatment, which must begin within 24 to 48 hours of onset, reduces the severity and duration of symptoms for most patients. Although antibiotics are not effective for treatment of influenza, secondary bacterial pneumonia should be treated with an appropriate antibiotic. Otherwise, treatment of influenza is largely supportive care, with assisted ventilation techniques required for severe cases of viral pneumonia.

Institutionalized patients should be placed in appropriate isolation with droplet precautions. Staff members caring for these patients should pay particular attention to masks and to hand washing. Staff members with symptoms compatible with influenza should not have contact with patients and should recuperate at home.

Influenza A: The Zoonotic Connection

James Howell, DVM, MPH
Veterinary Epidemiologist

In 1997, 18 individuals contracted influenza A infection from poultry in the Hong Kong live bird market. This was the first known outbreak of human influenza attributed to an animal influenza virus since the 1976 “swine flu” episode. Since then, several human influenza cases have been identified as being caused by an avian influenza virus. The most serious outbreak is the ongoing outbreak of highly pathogenic avian influenza,

influenza A (H5N1), which has affected the poultry industry in 10 Asian countries, with over 108 human cases and 54 deaths identified as of June 30, 2005. Because of the number of countries impacted and the number of human cases, there is much concern that this avian virus could be a precursor virus for an influenza pandemic.

Influenza is an acute viral disease of the respiratory tract and clinical descriptions of the disease in humans, swine, equine, and avian species are similar. In avian species, there is also an enteric component which may be a major feature of the infection and the major source of virus secretion. In general, influenza A subtypes that cause disease are species specific in mammals, but cross-over infections do occur. Serological epidemiology suggests that animal influenza subtypes introduced and adapted to human-to-human transmission have been the cause of past pandemics. Waterfowl, such as ducks and geese, are thought to be the original source of all the influenza A subtypes.

Influenza A virus subtypes are identified by two glycoproteins, hemagglutinin (H) and neuraminidase (N). Each influenza subtype is identified by its combination of H and N proteins. A limited number of subtypes has been linked to infections in mammalian species, but all combinations of the 15H and 9N glycoproteins studied have been identified in avian species, particularly wild waterfowl and shorebirds. Recently a new hemagglutinin (H16) was identified in European gulls. Based on serological studies, it is thought that only H1, H2, or H3 subtypes can infect humans or, at least, have been the only ones to infect humans during the past 100 years. These same studies provide information on the virus subtypes that have been associated with past pandemics (Table 1). Since 1997, there is increasing evidence that H5 or H7 viruses can also cause human illness (Table 2).

Table 1. Influenza Virus Subtypes Associated with Human Pandemics

Pandemic Year	Influenza Virus Subtype
1874	H3N8
1890	H2N2
1902	H3N2
1918	H1N1 "Spanish"
1933	H1N1 (first isolation of the virus)
1947	H1N1
1957	H2N2 "Asian"
1968	H3N2 "Hong Kong"
1976	H1N1 "Swine"
1977	H1N1 + H3N2 "Russian"

Table 2. Recent Human Cases Caused by Avian Influenza Subtypes

Year	Subtype	Cases (Deaths)	Locations
1997	H5N1	18 (6)	Hong Kong
1999	H9N2	2	Hong Kong
2002	H7N2	1	Virginia
2003	H5N1	2 (1)	Hong Kong
2003	H7N7	69 (1)	Netherlands
2003	H7N2	1	New York
2003-05	H5N1	107 (54) *	Asia
2004	H7N3	2	Canada
2004	H9N2	1	Hong Kong
2004	H10N7	2	Egypt

*World Health Organization, as of June 17, 2005

Wild waterfowl (especially ducks), shorebirds, and sea birds are a reservoir of avian influenza, with the various subtypes infecting their intestinal tracts without causing illness. At one lake site in Alaska over a four-year period, 108 isolations of eight different influenza A subtypes were identified from duck feces or from lake water.

Wild ducks secreting influenza virus can introduce virus to domestic ducks when wild ducks are allowed to intermingle or share ponds with domestic ducks. The virus can be found in both feces and the water in which they swim. Domestic ducks may or may not have clinical signs of influenza. In a four-year period in China and Hong Kong, 46 different H-N subtypes were identified in birds, 43 from domestic ducks. This finding is significant in that China raises a large number of ducks for human consumption and is located on a major flyway for migrating waterfowl, providing a ready source for human infections and distribution of viruses across a large area of the world.

In domestic poultry, influenza A subtypes are classified into two categories: low pathogenic avian influenza (LPAI) or high pathogenic avian influenza (HPAI). LPAI infections cause very mild infections, but HPAI infections often result in clinical influenza with high morbidity and mortality. The current H5N1 subtype present in Asia is a HPAI virus, and infections in poultry flocks have resulted in almost 100 percent mortality within 24 hours. HPAI infections have been associated with influenza H5 and H7 subtypes only, though not all H5 and H7 subtypes are highly pathogenic.

Until recently, it was thought that avian viruses only became infectious to humans by re-assortment of genetic material between avian viruses and viruses adapted for mammalian transmission, such as those infecting swine. The ability of swine influenza viruses to infect humans has been known since 1918, when an epidemic in swine coincided with the pandemic in humans. Opposing theories exist as to whether swine transmitted the infection to humans or humans transmitted the infection to swine. The influenza A (H1N1) subtype identified by serological epidemiology as causing the 1918 pandemic still circulates in swine populations around the world. Serological studies in swine have shown that, in the U.S., 25-33 percent of slaughter hogs show evidence of H1N1 infections. In 1976, an outbreak of “swine flu” at Fort Dix, New Jersey, caused by a similar H1N1 virus resulted in a number of human infections and one death. In 1988, an outbreak of swine influenza at a Wisconsin fair resulted in 19 of 25 swine exhibitors with clinical evidence of influenza having antibodies to the swine influenza virus. Three health care workers exposed to the ill swine exhibitors also developed influenza-like illness. The current influenza A (H5N1) virus has been isolated from swine in Indonesia. The countries that are experiencing the current avian influenza outbreak also have large swine industries. Swine are often intermingled with ducks and chickens on farms, prompting concern that the potential for a re-assortment of viral genetic material in swine could lead to a virus better adapted to mammalian transmission.

In 1997, the first human cases of influenza A (H5N1) were identified in Hong Kong. This was the first time an avian subtype was known to have infected humans directly without adaptation to a lower mammalian host. The virus was first identified in Chinese geese in 1996. The human outbreak in 1997 was stopped by culling the entire poultry population in Hong Kong and disinfecting the live bird markets where transmission was taking place. Poultry outbreaks in Asia were recognized in 2001, 2002, and 2003. Since mid-December 2003, the following countries have been affected: Cambodia, China, Indonesia, Japan, Laos, Republic of Korea, Malaysia, Pakistan, Thailand, and Vietnam. Over 140 million birds have either died or have been destroyed in an effort to control the outbreak, and economic losses have approximated \$10-15 billion (U.S.). The agent is considered to be endemic in Asian domestic ducks; and since they are often asymptomatic, eliminating the virus will be problematic.

In January 2004, the first human cases associated with the current outbreak were reported from Thailand and Vietnam, followed by cases in Cambodia. To date, human cases have been related to the handling of sick poultry or exposure to infected blood or the consumption of undercooked chicken. There has been some evidence of case clustering, suggesting some person-to-person transmission for one or two generations of cases, but all clusters lead back to exposure to sick poultry. In addition to the H5N1 influenza cases recognized in humans, fatal H5N1 infections have been observed in tigers, leopards, and domestic cats after being fed raw meat from infected chickens.

Will this influenza A (H5N1) subtype virus, which has been sporadically infectious to people, be the novel virus for the next influenza pandemic? While the answer is unknown, there are a number of observations that suggest it has the potential to become more adaptable for human-to-human transmission.

- The virus is showing signs of genetic changes and difference in the clinical presentation in different geographic areas. There have been more clusters in northern Vietnam (8) than in southern Vietnam

(2). It has been suggested that the virus circulating in northern Vietnam may be able to transmit from human to human more easily.

- The age range of cases is becoming wider. The average age of patients in northern Vietnam has increased from approximately 17 years of age in 2004 to approximately 31 years of age in 2005, while the approximate age of cases in southern Vietnam has remained almost unchanged at 15-18 years of age. The age range of infected persons has also increased from less than 1 year of age to greater than 80 years of age in northern Vietnam; while in southern Vietnam, the age range is still 2 to 40 years of age.
- In 2004, the case fatality rate in Thailand and Cambodia was 71-100 percent, but is now 34 percent in northern Vietnam. Additionally, there is evidence of several individuals having had asymptomatic infections. As a virus becomes more adapted to humans, the case fatality rate will often decrease, allowing the virus more stable propagation in the human population.

Despite the above observations, scientists have been unable to document conclusive evidence that the virus has developed capabilities for efficient human transmission. In the meantime, the following steps may reduce the risk of virus adaptation for efficient human-to-human transmission and decrease the economic damage to the Asian poultry industry.

1. Continued surveillance of the disease in human populations to determine if efficient human-to-human transmission is occurring.
2. Continued steps to prevent, control, and eradicate HPAI:
 - Surveillance for early detection and reporting of outbreaks.
 - Enhanced bio-security of poultry farms and other facilities where poultry are housed or traded.
 - Control of movement of birds and poultry products that may contain virus, including prevention of infection entering previously uninfected geographic areas.
 - Rapid, humane destruction of infected birds and those potentially exposed.
 - Disposal of carcasses and potentially infective material in a manner to prevent further spread.
 - Vaccination of poultry where appropriate.

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Components of Indiana's Influenza Surveillance Program

Shawn M. Richards, BS
Respiratory Epidemiologist

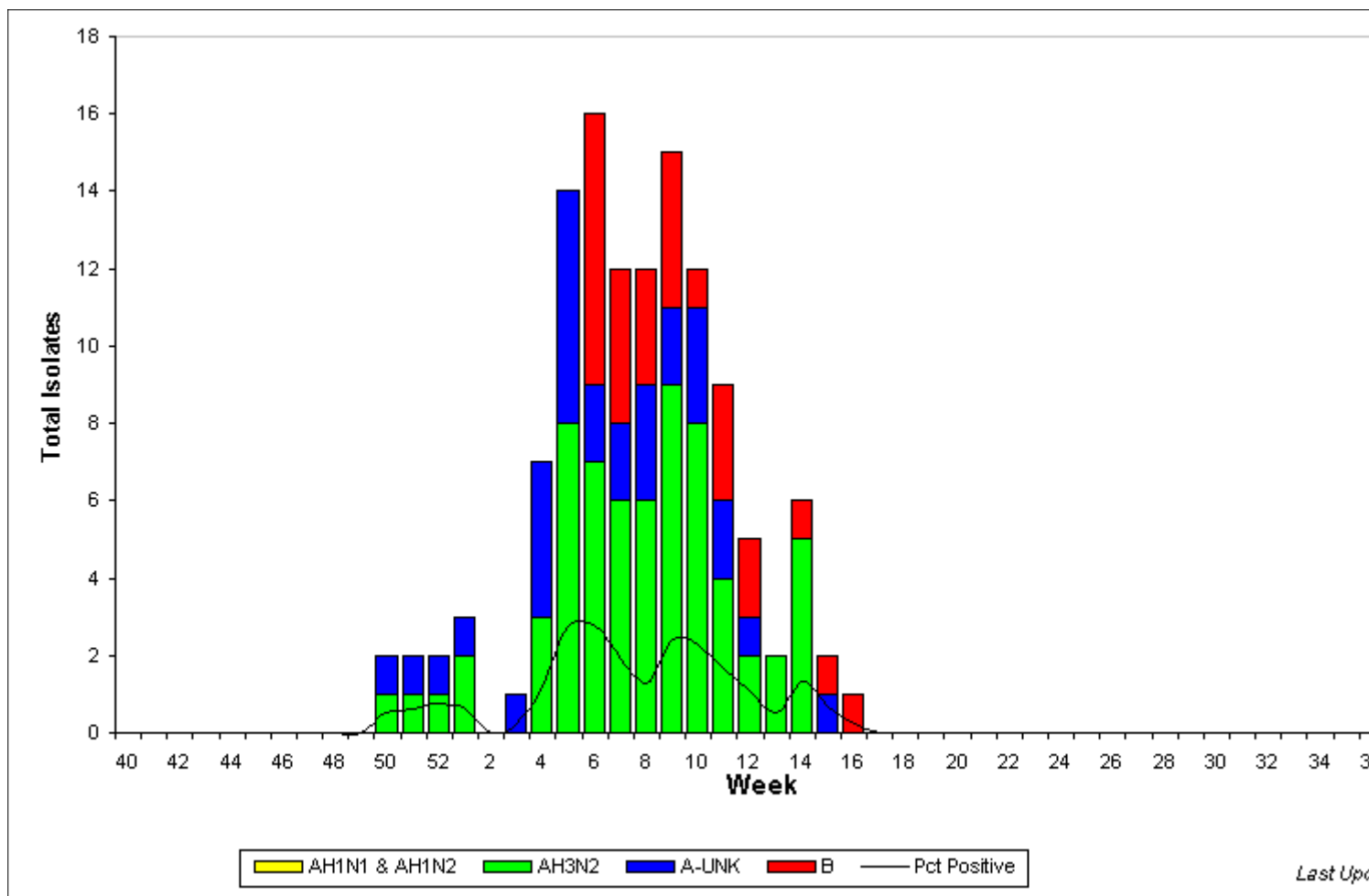
The Indiana State Department of Health (ISDH) uses six different surveillance components to depict influenza activity in Indiana. These complementary components help determine where, when, and what influenza viruses are circulating and if influenza activity is increasing or decreasing. These six components are:

1. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) reporting
2. U.S. Influenza Sentinel Provider Surveillance
3. 122 Cities Mortality Reporting System
4. State and Territorial Epidemiologists Report
5. Influenza Associated Pediatric Mortality Surveillance
6. Public Health Emergency Surveillance System (PHESS)

The **WHO and NREVSS Surveillance** component consists of 75 WHO and 50 NREVSS collaborating laboratories located throughout the U.S. that report the number of respiratory specimens tested and the number positive for Influenza A or B viruses each week to the Centers for Disease Control and Prevention (CDC). The ISDH Laboratory and other laboratories in Indiana participate in this surveillance network. Figure 1 shows the influenza subtypes, number of specimens, and the percent of specimens positive for influenza for the 2004-2005 season in Indiana.

Figure 1.

**WHO Isolates From Indiana
Reported By WHO/NREVSS Collaborating Laboratories
2004-2005 Season**



***All data are preliminary and may change as more reports are received.**

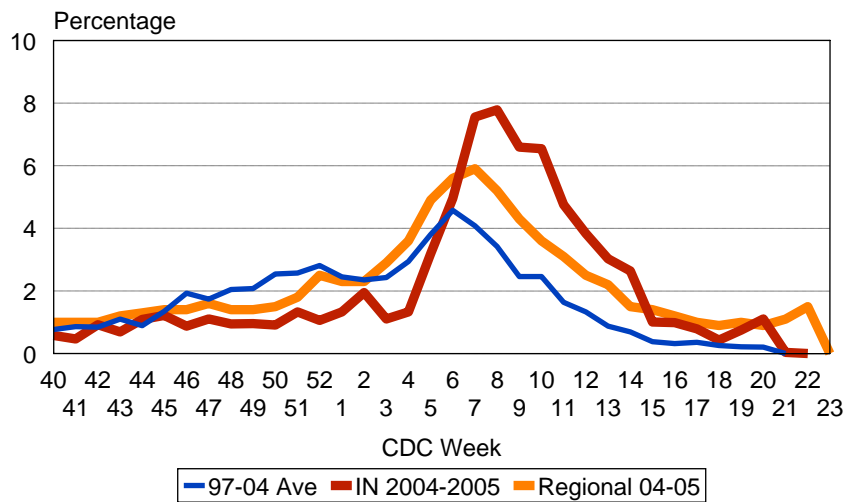
**National Center for Infectious Diseases
Centers for Disease Control and Prevention
Atlanta, GA**

The **U.S. Influenza Sentinel Provider Surveillance** component consists of 1,000 health care providers around the country who report the number of patients seen in their offices and the number of patients with influenza-like illness (ILI) on a year-round basis. ILI is defined by the CDC for the purpose of surveillance as fever ($>100^{\circ}\text{F}$ [37.8°C] oral or equivalent) and cough or sore throat (in absence of a known cause). Sentinel sites submit their data weekly to the CDC via Internet, phone, or fax. Additionally, sentinel participants collect nasopharyngeal swabs from patients with ILI whose onset of classic clinical signs started within 72 hours of the visit. The swabs are sent to the ISDH Laboratories for viral isolation. The ISDH provides the sentinel sites with viral submission kits, overnight shipping from the physician's office to the ISDH Laboratories, routine reports of influenza incidence in Indiana and the nation, educational opportunities regarding influenza, and a free subscription to the *Journal of Emerging Infectious Diseases*. Sentinel physicians who regularly report their data receive a certificate from the CDC and the ISDH. This past season, the ISDH provided sentinel sites with rapid laboratory test kits. However, since viral identification is critical to the surveillance system, the rapid tests served as a screening tool only and were not meant to replace viral submission.

The data that the sentinel sites provide to the CDC helps the ISDH monitor the incidence of influenza in Indiana. The ISDH has begun year-round influenza sentinel reporting since emergence of novel viruses and a potential ensuing pandemic can occur at any time of year. Figure 2 displays the percentages of patients with ILI seen at the sentinel sites from October 2004 to present.

Figure 2.

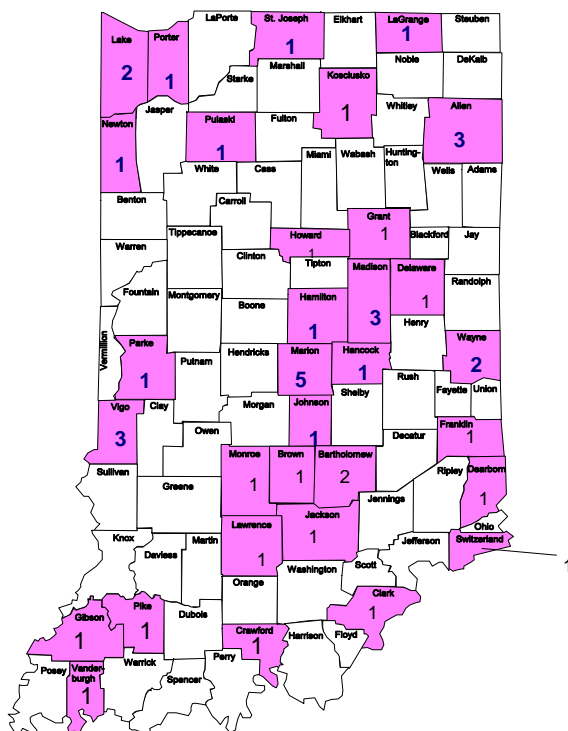
Percent of Patients Seen with Influenza-Like Illness, 2004-2005



Indiana has 31 sentinel sites located throughout different parts of the state. Examples of sentinel sites include private physicians' offices, nurse practitioners, urgent care facilities, local health departments, emergency departments, and universities. Figure 3 indicates the number of sentinel sites recruited in each county.

Figure 3.

Influenza Sentinel Sites 2004-2005



The ISDH extends special thanks to the following sentinel sites that have at least a 90 percent reporting record. The dedication and diligence that these sentinel sites have displayed are truly honorable.

- Allman Family Practice (100%)
- Jeffersonville Pediatrics (100%)
- Dr. Carl Kuenzli (100%)
- Switzerland County Nurse Managed Clinic (100%)
- Indiana State University Health Center (100%)
- Brookville Medical Clinic
- Notre Dame University Health Services
- Redimed N.E. of Allen County

The ISDH would like to recruit at least 50 sentinel sites throughout Indiana to obtain appropriate geographic data. Health care providers interested in becoming a sentinel site should contact Shawn Richards at srichard@isdh.state.in.us.

The third surveillance component is a **Mortality Reporting System** supported by the CDC. The vital statistics offices of 122 U.S. cities report the total number of death certificates filed in their cities and the number of those for which pneumonia or influenza was listed as the underlying contributing cause of death. The percentage of all deaths due to pneumonia and influenza are compared with a baseline and epidemic threshold value calculated for each week. Several cities in Indiana report their data to the CDC. The ISDH monitors the reported data as part of the comprehensive surveillance program.

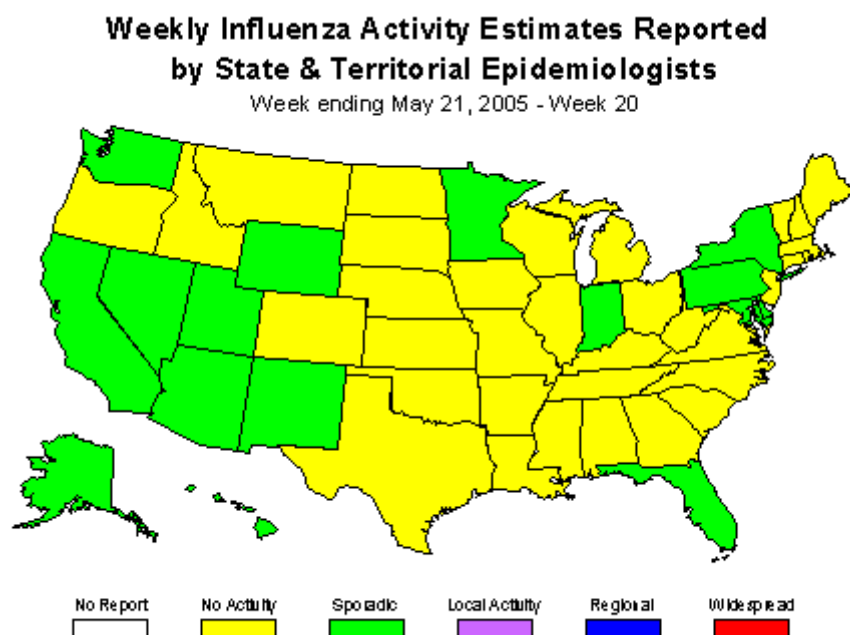
The fourth component is the **State and Territorial Epidemiologists Report**. State health departments report their estimated level of influenza activity each week to the CDC. The levels are reported as:

- **No activity:** No laboratory-confirmed cases of influenza and no reported increase in the number of ILI.

- **Sporadic:** Small numbers of laboratory-confirmed influenza cases of a single outbreak but no increase in ILI.
- **Local:** Outbreaks of influenza or increases in ILI cases **and** recent laboratory-confirmed influenza in a single region of the state.
- **Regional:** Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half of the regions of the state.
- **Widespread:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state.

Figure 4 shows data collected from all the State and Territorial Epidemiologists Report during the week of May 21, 2005.

Figure 4.



The fifth component of the surveillance program is monitored by the ISDH Epidemiology Resource Center through the **Influenza-Associated Pediatric Mortality Report**. Influenza-associated deaths and severe illness (encephalitis, behavioral change) in children under 18 years of age are reportable in all states. Influenza association is defined as positive for Influenza A or B by viral culture or by rapid testing method. The deaths are reported to the CDC via a secure data network. Two pediatric deaths in Indiana have been reported in 2005. As of May 25, 2005, pediatric deaths have been reported to CDC from 14 states; all deaths were reported during January-May.

The final component of the surveillance system is the ISDH **Public Health Emergency Surveillance System** (PHESS). PHESS is a 24/7 electronic syndromic surveillance system that provides early recognition of trends or changes that could indicate a communicable disease outbreak. PHESS is based on a statewide infrastructure for electronic transfer and analysis of data. Data sources include chief complaints from hospital emergency department visits, over-the-counter drug sales, Indiana Poison Center calls, and school absenteeism. These chief complaints are then categorized into syndromes, including respiratory. If data for a particular syndrome exceeds a threshold level, the system generates an alert, which is then reported to the appropriate ISDH field epidemiologist.

Influenza surveillance in Indiana is a multi-faceted system. Analyzing the data from several different components creates a general picture of the incidence of influenza in Indiana and can help detect outbreaks and potential changes in circulating influenza viruses.



Training Room

Indiana State Department of Health Immunization Program Presents: “Child and Adolescent Immunizations from A to Z”

The ISDH Immunization Program and Health Educators are offering this free, one-day educational course on all aspects of immunization practices. Topics include:

- Principles of Vaccination
 - Overview of the immune system
 - Classification of vaccines
- An Overview of Vaccine-Preventable Diseases
- General Recommendations on Immunization
 - Timing and spacing
 - Contraindications and precautions to vaccination
- Safe and Effective Vaccine Administration
 - Prior to administration
 - Administration
 - Documentation and reminder/recall
 - Adverse Events
- Safe Vaccine Storage and Handling
- Indiana Requirements
 - Schools
 - Daycare/Head Start
 - Exemptions
- Tools to Read Immunization Records
- Vaccine Misconceptions
 - MMR and autism
 - Thimerosal and mercury
 - Overloading the immune system
 - Influenza vaccine
- Reliable Resources

This course is designed for all immunization providers and staff. Presentation of this course takes six hours or can be customized to provide the components needed for your office or clinic staff. A training manual and certificate of attendance are provided to all attendees.

Courses are held throughout Indiana about four times per month. The schedule can be seen at www.in.gov/isdh/programs/immunization/ImmunizationTraining/Calendar.htm.

All persons involved in immunizations are encouraged to attend a course in their area. **Registration is required.** To attend or schedule/host a course in your area, or for more information on “Child and Adolescent Immunizations from A to Z” and other immunization education opportunities, please contact Beverly Sheets by calling (317) 501-5722 or e-mail hepbbev@aol.com.

Mark your calendars NOW!

Indiana Immunization Fall Awards Conferences:

When: **Sunday, Oct. 2, 2005**, "Reception with Speakers"
Monday, Oct. 3, 2005, "Conference"

Time: 8:30 am to 3:30 pm

Where: Indianapolis Hilton, downtown.

Speakers: William Atkinson, MD, MPH
Information, Education and Partnership Branch National Immunization Program
Centers for Disease Control and Prevention

Patricia Stinchfield, RN, CNP
The Children's Immunization Project
St. Paul, Minnesota
(Newest member of the ACIP)

Check out the new ISDH Immunization Program Web site at
<http://www.in.gov/isdh/programs/immunization.htm>.

NOTICE Pandemic Influenza Preparedness Tuesday, October 4, 2005 8:00 a.m. to 12:30 p.m.

The Indiana State Department of Health Pandemic Influenza Planning Committee, in collaboration with the ISDH Immunization Program, will host a "Pandemic Influenza Preparedness" educational session on Tuesday, October 4, 2005, from 8:00 a.m. to 12:30 p.m., Indianapolis time.

Keynote Speaker: William Atkinson, MD, Education, Information and Partnership Branch, National Immunization Program, Centers for Disease Control and Prevention. **Topic:** "Pandemic Influenza"
Please plan to register and attend this important and timely educational offering.

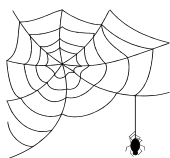
Watch for announcement of location!

Pre-registration will be required due to space limitations.

Contact: Send name, address, phone, e-mail to: Beverly Sheets, e-mail hepbbev@aol.com, fax 317-257-2135 OR

Janet Archer, e-mail jarcher@isdh.state.in.us, fax 317-234-3723

Hotel rooms will be available at the Hilton Downtown (Indianapolis) for lodging, Monday, October 3, 2005.
Phone 317-972-0600



Wonderful Wide Web Sites

ISDH Data Reports Available

The ISDH Epidemiology Resource Center has the following data reports and the Indiana Epidemiology Newsletter available on the ISDH Web Page:

http://www.in.gov/isdh/dataandstats/data_and_statistics.htm

Indiana Cancer Incidence Report
(1990, 95, 96, 97, 98, 99)

Indiana Cancer Mortality Report
(1990-94, 1992-96, 1999)

Indiana Health Behavior Risk Factors
(1999, 2000, 2001, 2002)

Indiana Health Behavior Risk Factors (BRFSS)
Newsletter (9/2003, 10/2003, 6/2004, 9/2004,
4/2005)

Indiana Hospital Consumer Guide
(1996)

Public, Hospital Discharge Data
(1999, 2000, 2001, 2002)

Indiana Mortality Report
(1999, 2000, 2001, 2002)

Indiana Natality Report
(1998, 99, 2000, 2001, 2002)

Indiana Induced Termination of Pregnancy Report
(1998, 99, 2000, 2001)

Indiana Marriage Report
(1995, 97, 98, 99, 2000)

Indiana Infectious Disease Report
(1997, 98, 99, 2000, 2001)

Indiana Maternal & Child Health Outcomes &
Performance Measures
(1990-99, 1991-2000, 1992-2001)

HIV Disease Summary

Information as of May 31, 2005 (based on 2000 population of 6,080,485)

HIV - without AIDS to date:

355	New HIV cases from June 2004 thru May 2005	12-month incidence	5.84 cases/100,000
3,674	Total HIV-positive, alive and without AIDS on May 31, 2005	Point prevalence	60.43 cases/100,000

AIDS cases to date:

371	New AIDS cases from June 2004 thru May 2005	12-month incidence	6.10 cases/100,000
3,758	Total AIDS cases, alive on May 31, 2005	Point prevalence	61.81 cases/100,000
7,648	Total AIDS cases, cumulative (alive and dead)		

REPORTED CASES

 of selected notifiable diseases

Disease	Cases Reported in May MMWR Weeks 18-22		Cumulative Cases Reported January -May MMWR Weeks 1-22	
	2004	2005	2004	2005
Campylobacteriosis	20	29	118	100
Chlamydia	1,771	1,781	7,727	8,450
<i>E. coli</i> O157:H7	0	1	12	9
Hepatitis A	6	6	19	21
Hepatitis B	4	3	13	10
Invasive Drug Resistant <i>S. pneumoniae</i> (DRSP)	16	31	74	111
Invasive pneumococcal (less than 5 years of age)	2	11	21	38
Gonorrhea	574	735	2,626	3,284
Legionellosis	1	1	10	6
Lyme Disease	0	0	1	2
Measles	0	0	0	0
Meningococcal, invasive	0	1	8	8
Pertussis	16	29	37	142
Rocky Mountain Spotted Fever	0	0	1	0
Salmonellosis	47	46	158	136
Shigellosis	11	3	58	33
Syphilis (Primary and Secondary)	9	12	24	31
Tuberculosis	9	13	54	55
Animal Rabies	1 (bat)	1 (bat)	3 (2bats, 1skunk)	3 (bats)

For information on reporting of communicable diseases in Indiana, call the ISDH Epidemiology Resource Center at 317-233-7125.

Indiana
Epidemiology
Newsletter

The *Indiana Epidemiology Newsletter* is published by the Indiana State Department of Health to provide epidemiologic information to Indiana health professionals and to the public health community.

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Sue Uhl

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